UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/618,709	07/15/2003	Jun Funakoshi	108066-00090	4930

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EXAMINER
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ART UNIT	PAPER NUMBER
2622	

NOTIFICATION DATE	DELIVERY MODE
01/11/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

DCIPDocket@arentfox.com
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	Application No.	Applicant(s)
Office Action Summary	10/618,709	FUNAKOSHI ET AL.
	Examiner	Art Unit	
	Chriss S. Yoder, III	2622	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>18 December 2007</u>.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-8</u> is/are pending in the application.

  4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1-8</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on <u>15 July 2003</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

  Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

  Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

  a)☒ All b)☐ Some * c)☐ None of:

    1. ☒ Certified copies of the priority documents have been received.

    2. ☐ Certified copies of the priority documents have been received in Application No. _____.

    3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

  * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)   4) ☐ Interview Summary (PTO-413)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)   Paper No(s)/Mail Date. _____.
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)   5) ☐ Notice of Informal Patent Application
     Paper No(s)/Mail Date _____.   6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set

forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this

application is eligible for continued examination under 37 CFR 1.114, and the fee set

forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action

has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on

December 18, 2007 has been entered.

Response to Arguments

Applicant's arguments with respect to claims 1-8 have been considered but are

moot in view of the new ground(s) of rejection. Applicant's amendment necessitated the

new ground(s) of rejection presented in this Office action.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1.   Claim 7 is rejected under 35 U.S.C. 102(e) as being anticipated by Fossum et al.

(US Patent # 6,456,326).

2.   In regard to **claim 7**, note Fossum discloses an image sensor for capturing

images, comprising a pixel array where pixels having photoelectric conversion elements

are arranged in a matrix (column 4, lines 28-30 and figure 3: 300), a plurality of row

select lines which are arranged in a row direction in said pixel array (column 3, lines 1-6

and figure 1: RS), a plurality of column lines which are arranged in a column direction in

said pixel array (column 3, lines 7-13 and figure 1: 116), a sample hold circuit disposed

in each one of said column lines for sample holding photoelectric conversion signals of

said pixels (column 3, lines 7-23 and figure 1: COL CKT), a vertical scan circuit for

generating vertical scan signals to sequentially select said plurality of row select lines

(column 4, lines 31-40), and a horizontal scan circuit for generating horizontal scan

signals to sequentially select the output of said sample hold circuit while each one of

said row select lines is selected (column 4, lines 31-40), wherein said vertical scan

circuit sequentially selects and scans said plurality of row select lines within the vertical

scan period which is part of the frame period (column 4, line 31 – column 5, line 67; the

vertical scan period is considered to be transfer period within the frame period), and

does not select said row select line outside said vertical scan period in said frame

period (column 4, line 31 – column 5, line 67; during each frame period, the row select

line is only selected during readout of that row), said frame period being a period

between adjacent selections of a firstly selected row selection line (column 4, line 60 –

column 5, line 67; the frame period is considered to be the time between two adjacent

frames, i.e. the "frame rate"), said frame period being longer than said vertical scan

period (column 4, line 31 – column 5, line 67), and wherein an integration period of the

plurality of rows of pixels is shifted with respect to each other (column 4, line 60 –

column 5, line 67; the integration period for each row is considered to be the time

between the reset of two adjacent frames).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3.   Claims 1-6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Fossum et al. (US Patent # 6,456,326) in view of Anderson et al. (US Patent #

6,498,623).

4.   In regard to **claim 1**, note Fossum discloses an image sensor for capturing

images, comprising a pixel array where pixels having photoelectric conversion elements

are arranged in a matrix (column 4, lines 28-30 and figure 3: 300), a plurality of row

select lines which are arranged in a row direction in said pixel array (column 3, lines 1-6

and figure 1: RS), a plurality of column lines which are arranged in a column direction in

said pixel array (column 3, lines 7-13 and figure 1: 116), a sample hold circuit disposed

in each one of said column lines (column 3, lines 7-23 and figure 1: COL CKT), a

vertical scan circuit for generating vertical scan signals to sequentially select said

plurality of row select lines (column 4, lines 31-40), and a horizontal scan circuit for generating horizontal scan signals to sequentially select an output of said sample hold circuit (column 4, lines 31-40), wherein said vertical scan circuit sequentially selects and scans said plurality of row select lines within a first vertical scan period when said image sensor is controlled to a first frame period (column 4, lines 31-40), a frame period being a period between adjacent selections of a firstly selected row selection line (column 4, line 60 – column 5, line 67; the frame period is considered to be the time between two adjacent frames, i.e. the "frame rate"), and wherein an integration period of the plurality of rows of pixels is shifted with respect to each other (column 4, line 60 – column 5, line 67; the integration period for each row is considered to be the time between the reset of two adjacent frames).

Although Fossum does disclose that the frame period can be adjusted, and that the frame period is set based on the integration period, readout period, and delay before the next frame (column 4, line 60 – column 5, line 5), Fossum fails to explicitly disclose sequentially selecting and scanning said plurality of row select lines within said first vertical scan period even when said image sensor is controlled to a second frame period, which is longer than said first frame period. In analogous art, Anderson discloses the use of an image sensor that has multiple frame lengths (column 4, lines 25-28), and wherein the time period for transferring the image remains constant, even when the image sensor is controlled to a different frame period, which is longer than a first frame period (column 7, lines 56-67 and column 8, lines 36-55), and that the second frame period is longer than the vertical scan period (column 7, lines 56-67 and

column 8, lines 36-55). Anderson teaches that maintaining the length of the transfer period while adjusting the frame rate is preferred in order adjust the exposure time and yield the minimum frame length (column 7, lines 56-67 and column 8, lines 36-55). Therefore, it would have been obvious to one of ordinary skill in the art to modify the Fossum device to include the use sequential selection and scanning of said plurality of row select lines within said first vertical scan period even when said image sensor is controlled to a second frame period, which is longer than said first frame period, as suggested by Anderson.

5.   In regard to **claim 2**, note Fossum discloses that said horizontal scan circuit generates said horizontal scan signals while said vertical scan circuit selects each one of said row select lines (column 5, lines 42-60 and figure 6), and Anderson discloses that transfer signals are not output after said first transfer period in said frame period has elapsed (column 9, lines 40-45, the transfer period of Anderson is considered to be the period during which Fossum outputs the vertical scan and horizontal scan signals, in other words, neither of scan signals are output after the image is transferred).

6.   In regard to **claim 3**, note Fossum discloses that said pixel comprises a photoelectric conversion element , a reset transistor, a source follower transistor, and a selecting transistor which is controlled by said row select lines (column 3, lines 1-14 and figure 1: PG, RST, RS, and TX).

7.   In regard to **claim 4**, note Fossum discloses that said first vertical scan period is a period which is a part of said first frame period (column 4, line 60 – column 5, line 67; the vertical scan period is considered to be transfer period within the frame period).

8.   In regard to **claim 5**, note Fossum discloses an image sensor for capturing

images, comprising a pixel array where pixels having photoelectric conversion elements

are arranged in a matrix (column 4, lines 28-30 and figure 3: 300), a plurality of row

select lines which are arranged in a row direction in said pixel array (column 3, lines 1-6

and figure 1: RS), a plurality of column lines which are arranged in a column direction in

said pixel array (column 3, lines 7-13 and figure 1: 116), a sample hold circuit disposed

in each one of said column lines for sample holding photoelectric conversion signals of

said pixels (column 3, lines 7-23 and figure 1: COL CKT), a vertical scan circuit for

generating vertical scan signals to sequentially select said plurality of row select lines

(column 4, lines 31-40), and a horizontal scan circuit for generating horizontal scan

signals to sequentially select an output of said sample hold circuit while each one of

said row select lines is selected (column 4, lines 31-40), wherein said vertical scan

circuit sequentially selects and scans said plurality of row select lines within a first

vertical scan period when said image sensor is controlled to a first frame period (column

4, lines 31-40), a frame period being a period between adjacent selections of a firstly

selected row selection line (column 4, line 60 – column 5, line 67; the frame period is

considered to be the time between two adjacent frames, i.e. the "frame rate"), and

wherein an integration period of the plurality of rows of pixels is shifted with respect to

each other (column 4, line 60 – column 5, line 67; the integration period for each row is

considered to be the time between the reset of two adjacent frames).

Although Fossum does disclose that the frame period can be adjusted, and that

the frame period is set based on the integration period, readout period, and delay before

the next frame (column 4, line 60 – column 5, line 5), Fossum fails to explicitly disclose

sequentially selecting and scanning said plurality of row select lines within said first

vertical scan period even when said image sensor is controlled to a second frame

period, which is longer than said first frame period. In analogous art, Anderson

discloses the use of an image sensor that has multiple frame lengths (column 4, lines

25-28), and wherein the time period for transferring the image remains constant, even

when the image sensor is controlled to a different frame period, which is longer than a

first frame period (column 7, lines 56-67 and column 8, lines 36-55), and that the

second frame period is longer than the vertical scan period (column 7, lines 56-67 and

column 8, lines 36-55). Anderson teaches that maintaining the length of the transfer

period while adjusting the frame rate is preferred in order adjust the exposure time and

yield the minimum frame length (column 7, lines 56-67 and column 8, lines 36-55).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the

Fossum device to include the use sequential selection and scanning of said plurality of

row select lines within said first vertical scan period even when said image sensor is

controlled to a second frame period, which is longer than said first frame period, as

suggested by Anderson.

9.   In regard to **claim 6**, note Fossum discloses that the transfer signal is not output

after said first transfer period in said frame period has elapsed (column 4, line 31 –

column 5, line 67; during each frame period, the transfer signal is not considered to be

output after the image is transferred, and a delay is added before the next image is

read).

10.   In regard to **claim 8**, note the primary reference of Fossum in view of Anderson

discloses the use of an image sensor for capturing images, as claimed in claims 1, 5,

and 7 above. Therefore, it can be seen that the primary device lacks the use of a line

buffer for storing one row of output of said sample hold circuit, and an image processor

for inputting an output of said line buffer, wherein in the horizontal scan period, an

output signal of said sample hold circuit is stored in said line buffer responding to said

horizontal scan signal, and said output signal in said line buffer is output to said image

processor responding to an output clock with a cycle longer than said horizontal scan

signal.

        Official Notice is taken that the concepts and advantages of using a line buffer for

storing one row of output of said sample hold circuit, and an image processor for

inputting an output of said line buffer, wherein in the horizontal scan period, an output

signal of said sample hold circuit is stored in said line buffer responding to said

horizontal scan signal, and said output signal in said line buffer is output to said image

processor responding to an output clock with a cycle longer than said horizontal scan

signal are notoriously well known and expected in the art. Therefore, it would have

been obvious to one of ordinary skill in the art to modify the primary device of Fossum in

view of Anderson to include the use of a line buffer for storing one row of output of said

sample hold circuit, and an image processor for inputting an output of said line buffer,

wherein in the horizontal scan period, an output signal of said sample hold circuit is

stored in said line buffer responding to said horizontal scan signal, and said output

signal in said line buffer is output to said image processor responding to an output clock

with a cycle longer than said horizontal scan signal in order to output the image as it is captured in order to provide real time image processing and storage for live view generation or playback at a later time.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US006515701B2: note the use of a rolling shutter having a delay before the beginning of the next frame.

US 20020175954A1: note the use of a rolling shutter having a delay before the beginning of the next frame.

US 20020089597A1: note the use of a rolling shutter.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chriss S. Yoder, III whose telephone number is (571) 272-7323. The examiner can normally be reached on M-F: 8 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lin Ye can be reached on (571) 272-7372. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

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you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CSY
January 4, 2008

LIN YE
SUPERVISORY PATENT EXAMINER